

8 July 2003

**Opposition to Patent No. 0998539 in the name of Rhodia Limited**

Title of the invention : Refrigerant compositions

Statement of Facts and Grounds

Opponent: Solvay (Limited Liability Company), rue de Prince Albert 33, B-1050 Brussels, Belgium

Petitions

The Opponents request that the contested patent be revoked in its entirety in accordance with Article 102(1) EPC.

In a secondary capacity they request that oral proceedings be appointed under Article 116 EPC prior to any decision which does not grant their request.

Grounds

The Opposition is based on the grounds of  
Article 100(c), namely inadmissible broadening of the subject matter of the contested patent beyond the content of the application as filed;  
Article 100(b), namely insufficient disclosure;  
Article 100(a) in connection with Articles 52, 54 and 56 EPC, namely lack of novelty and inventive step.

Proof

Documents D1 to D8 are identified on the form and attached hereto.

To make analysis easier the Opponent has provided the following table showing the subject matter of some of the claims of contested patent, focusing on the HFC-125/HFC-134a/n-butane compositions:

Claim	HFC-134a (i)	n-butane (ii)	HFC-125 (iii)
1	30-50%	1-4%	<60%
2	50%		
4	50-70%	1-4%	(21-49%)
7	30-94%	1-4%	5-60% 5-20% excluded
8		2-4%	
9		3-4%	
13	50%	3.5-4%	46-46.5%
16 (use)	30-94%	1-10%	5-60%

### **1. Article 100(c) - Inadmissible broadening of the subject matter of the contested patent**

#### Claims 1 to 3, 8 to 12, 14 to 15 and 18 to 20

The creation of the range "30 to 50 wt.%" for ingredient (i) of the composition infringes Article 123(2) EPC as the concentration of 50% of ingredient (b) was disclosed in the application as filed only as being the lower limit of the range 50-90% (page 3, line 37 of the published application).

Thus, a range of 30-50% would not have been inferred from the application as filed.

Nor does the application as filed disclose the combination of 30% of ingredient (i) with 1-4% of hydrocarbon other than isobutane: In fact, to obtain a composition containing 100% of ingredients, the hydrocarbon would have to be present in a quantity of 10% as the content of ingredient (i) is 30%.

Therefore the ranges cannot be combined in the light of the teaching of the application as filed.

Thus, a fortiori, the combination of these ranges with a group of compounds (iii) arbitrarily created by eliminating octofluoropropane from the group initially disclosed was not disclosed in the application as filed.

Consequently, claims 1 to 3, 8 to 12, 14 to 15 and 18 to 20 which contain the discredited features infringe Article 123(2) EPC.

#### Claims 4 to 6

For reasons which correspond to those set out above the conversion of the lower limit of 75% (page 3, line 37) into the upper limit of the range of 50-75% of ingredient (i) contravenes the requirements of Article 123(2).

It should be noted that the compositions to which claim 4 relates have a content of ingredient (iii) of 21-49 wt.%, based on 100% of ingredients. There is no disclosure in the application as filed which would allow the skilled man to identify this range.

Consequently, claims 4 to 6 which contain the discredited features infringe Article 123(2) EPC.

#### Claim 7

The combination of the value of 30% for ingredient (i) with a range of 1-4% of hydrocarbon cannot be inferred from the application as filed (see above).

Similarly, restricting to contents of R125 other than 5-20% was not part of the disclosure of the application as filed: the application merely taught that R125 is typically present in an amount of 5-20% when it is not part of component (a) (page 3, lines 30-32). However, this does not mean that this range is excluded or can be excluded when R125 is part of component (a) ("Reverse conclusion" is not part of the original disclosure).

## Claim 16

In the application as filed the compositions were intended to replace R12 and R22.

In the examination proceedings the proprietor emphasised in their letter of 03.05.2001 (page 3, penultimate paragraph) that the skilled man was well aware that compositions suitable for replacing R12 are not suitable for replacing R22.

Consequently, the skilled man would not have inferred from the applications as filed that all compositions now claimed could be used to specifically replace R22.

This is corroborated by the fact that the compositions described in claim 16 include the compositions (A) of D3 (see abstract) which are suitable for replacing R12.

Consequently, the subject of claim 16 contravenes the requirements of Article 123(2) EPC.

## **2. Article 100(b) - Insufficient Disclosure**

As discussed previously, the combination of the value of 30% for ingredient (i) with a quantity of 1-4% of hydrocarbon in claims 1 to 3, 7 to 12, 14 to 15 and 18 to 20 necessarily results in a composition containing less than 100% of ingredients. ~~There is no information in the contested patent which~~ allows the skilled man to supplement these compositions. Consequently, the subject of the claims mentioned is not described in a sufficiently complete manner (Article 83 EPC).

Regarding claim 16 it follows from the earlier discussion that some of the compositions according to this claim do not meet the requirement of being able to replace R22.

### 3. Priority

The priority document does not contain any disclosure of a range of hydrocarbons of 1-4%. The support for the range of 3-4% (page 3, line 12 of the application as filed), mentioned by the proprietor during the examination proceedings to justify the creation of this range, was in fact added at the stage of filing the PCT.

Consequently, the invention claimed in the claims containing this feature is not the same as in the priority application which means that claims 1 to 12, 14, 15 and 18 to 20 do not enjoy the priority rights.

Similarly, the composition R125 46.5%, R134a 50% and R600 3.5% (page 5; lines 12-15) was added at the PCT filing stage.

Consequently, the object of claims 13 to 15 and 17 to 20 does not enjoy the priority rights.

The Opponents submit that the object of claim 16 cannot be inferred from the priority document either, by analogy with the arguments given above regarding Article 123(2) EPC.

### 4. Novelty

#### 4.1.1. The subject of claims 1 to 9 and 11 to 20 is not novel in the light of D1

Citation D1 was distributed to the participants at the beginning of the "1998 International Refrigeration Conference" on 14.07.1998, the day before the International filing date (15.07.1998) of the contested patent. Consequently, it is part of the prior art by virtue of Article 54(2) for all the claims which do not benefit from the priority date.

D1 discloses (page 26, paragraph 4, lines 1-2; page 28, Table 1) a refrigerant composition containing

- (i) HFC-134a - 50 wt. %
- (ii) n-butane (R600) - 3.5 wt. %
- (iii) HFC-125 - 46.5 wt. %

and describes its use as a refrigerant as a replacement for R22 (page 30, conclusions).

Consequently, the subject of claims 1-9 and 11-20 of the contested patent are stripped of their novelty.

#### **4.1.2. The subject of claims 1 to 9 and 11 to 20 is not novel in the light of D2**

The contents of document D2 were made available to the public in 1996 and consequently form part of the prior art by virtue of Article 54(2) EPC. (The pages were numbered at a later stage to make reading easier).

D2 discloses (page 3, paragraph 4.1 "Experimental results" and page 4, paragraph after Table 3) a refrigerant composition containing

- (i) HFC-134a - 50 wt. %
- (ii) isobutane (R600a) - 4 wt. %
- (iii) HFC-125 - 46 wt. %

and describes its use as a particularly preferred refrigerant as a replacement for R22 (page 4, Fig. 1; page 6, conclusions).

On page 2, paragraph 1, last sentence, D2 generally teaches the use of minor amounts of hydrocarbons as an ingredient in compositions for replacing R22. n-butane (R600) is specifically mentioned in Table 1 on page 2.

The skilled man would have seriously considered combining this teaching with the most preferred composition specified above.

Consequently, the subject of claims 1 to 9 and 11 to 20 of the contested patent lacks novelty.

## 5. Inventive Step

For the eventuality the Opposition Division deem the subject of the claims to satisfy the novelty requirement in the light of D2, the Opponents submit that, in the light of their arguments, the substitution of isobutane in the preferred compositions for replacing R22 by the different compound n-butane is made obvious by the teaching of D2 alone.

Moreover, document D3 provides a clear incitement that it is advantageous to replace isobutane with n-butane in very similar compositions. The Opponents draw the attention of the Opposition Division to the fact that document D2 provides a connection between the replacement of R12 and R22 (page 1, penultimate paragraph). Therefore, it is incontestable that the skilled man would have considered the teaching of D3 to be equally relevant in the context of the substitution of R22.

Citation D4 shows that the replacement of R22 with compositions R125/R134a with a small amount of hydrocarbon was a general principle that was well known before the priority date of the contested patent (page 49, from the middle to the bottom of the column and Table on page 50).

Citation D5 shows that HFC-134a forms an azeotrope with n-butane, containing less hydrocarbon than the azeotrope of HFC-134a with the isobutane discussed in D2, page 3, paragraph 2. This constitutes an additional motivation for the skilled man, confirming the suggestion in D3, as he could expect reduced flammability owing to the lower hydrocarbon content in the azeotrope.

With regard to claim 10, the Opponent is of the opinion that the characteristics thereof (unspecified mixture of hydrocarbons) are not associated in the contested patent with any technical effect and that the subject of this claim does not solve any particular problem.

Moreover, citations D6 and D7 show that refrigerant compositions containing HFC-125 or HFC-134a respectively and at least one hydrocarbon according to the description of the contested patent were in any case well known.

It follows that all the claims of the contested patent lack inventive merit.

For the reasons discussed above the subject of the claims also flows in obvious manner from citation D8 which also describes refrigerant compositions R125/R134a/R600a 46/50/4 and their use for replacing R22 (page 444, Fig. 4 and the paragraph before this figure and abstract), particularly in conjunction with citation D3.